



# **Joint Capability Technology Support (JCTS)**

in support of:

## **Remote Sensing Center (RSC)–National Capital Region (NCR)**

**Issued to:**

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## **C.1 BACKGROUND**

The Department of Defense provides fully capable Special Operations Forces (SOF) to defend the United States and its interests, and to plan and synchronize operations against terrorist networks. To achieve this mission, SOF commanders and staff must plan and lead a full range of lethal and nonlethal special operations missions in complex and ambiguous environments. Likewise, SOF personnel serve as key members of Joint, Interagency, and International teams and must be prepared to employ all assigned authorities and apply all available elements of power to accomplish assigned missions. In this capacity, SOF personnel must maintain the highest degree of professionalism, cultural awareness, responsiveness and initiative.

In support of SOF operations, specialized intelligence support, cyber support, and integrating capabilities are required that must continually adapt and innovate with both technical and industrial capabilities to meet the Warfighter's needs. This creates requirements that are fluid and ever changing throughout the entire mission life cycle. This TO will provide technical, engineering and subject matter expertise to refine, extend and evaluate ground, maritime, and airborne Intelligence, Surveillance, and Reconnaissance (ISR) systems, as well as to support ISR enrichment to other sensors and integrated cyber operations activities. This task order will focus on integration and testing and evaluation of System on a Chip (SoC), across the applicable and appropriate ISR systems, to include required communications, cyber security, and information assurance capabilities.

### **C.1.1 PURPOSE**

The purpose of Joint Capability Technology Support (JCTS) is to expand upon current ISR and cyber capabilities to supply the Department of Defense (DoD) with leading capabilities and technologies for observation, visualization, and collaboration among tactical, operational, and strategic warfighting echelons. To better leverage and integrate capabilities in air, space, and cyberspace, this effort supports SoC integration and testing and evaluation, reliable information architectures, military sensors, ISR platforms, and analysis tools, all enabled by Warfighters trained and educated to transform information from multiple sources into intelligence in support of the combatant commander missions.

### **C.1.2 AGENCY MISSION**

The Remote Sensing Center (RSC) is an interdisciplinary research group chartered under the Dean of Research at the Naval Postgraduate School (NPS). In support of the Office of the Deputy Assistant Secretary of Defense Office of Command, Control, And Communication (C3), Cyber, and Business Systems (C3CB), the RSC office in the National Capitol Region (RSC-NCR) interacts with DoD, Intelligence Community (IC) and other US Government mission partners to understand their requirements, discover cutting edge technologies (in government, commercial, academic, and non-profit sectors), and bring real world examples to NPS for enhanced training, education, thesis focus, and application as well as viable and unique solutions to the Remote Sensing Community. In parallel, the RSC-NCR also brings technical and programmatic expertise together to allow DoD and IC mission partners to achieve their mission. The majority of supported projects involve emerging or future needs that require forward-looking and quick-reaction capabilities. The RSC-NCR is a mission-enabler with the tools and skillsets to support needs at the tempos they emerge. In addition RSC-NCR supports research,

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programmatic, and execution effort with DoD and IC Mission partners. These roles include support to the following:

- a. Leading the development and implementation of Department-wide communications, command and control, and cyberspace architecture, technical framework, standards, and strategic approaches;
- b. Performing Overarching Integrated Product Team responsibilities for selected Major Defense Acquisition Programs and Major Automated Information System programs;
- c. Leading or supporting Analysis of Alternatives and studies as directed for selected capabilities;
- d. Performing acquisition-related enterprise wide portfolio management and net-centric systems engineering across space, air, ground, maritime, and cyberspace domains;
- e. Guiding and facilitating the communications, command and control, and cyberspace capabilities development through the Joint Capabilities Integration and Development System; Planning, Programming, Budgeting and Execution System; and Defense Acquisition Systems processes for all designated information technology and National Security Systems (NSS) programs; and
- f. Providing technical direction and integration efforts across DoD components and synchronize critical DoD communications, command and control, and cyberspace capabilities.

### **C.2 SCOPE**

This effort is to provide adaptation, innovation, and emerging capabilities. Specifically, this effort will integrate and test and evaluate SoC for demonstration and operational support for applicable and approved ISR systems, and associated cyber security, communications, and information assurance.

The scope of this effort will include the following tasks:

- a. Task 1 - Provide Project Management Support
- b. Task 2 – Provide Transition-In Support
- c. Task 3 – Provide Transition-Out Support
- d. Task 4 – Provide Engineering Services
- e. Task 5 – Provide Education, Training, and Tactics, Techniques, and Procedures (TTP) Development services

### **C.3 CURRENT ENVIRONMENT**

DoD ISR is exquisitely equipped to operate in permissive environments. However, the President, Secretary of Defense, Chairman of the Joint Chiefs of Staff, and Chief of Staff of the Air Force have all directed the transformation of the force to one more suited to win the nation's wars in contested or highly contested environments. Key to maintaining the ability to operate in both permissive and contested environments is the appropriate mix of personnel, manned platforms/sensors, and remotely piloted aircraft. Air, land, maritime, space, human, and cyber sensors must be able to penetrate denied space, survive to operate, and provide required levels of persistence. The challenge is to integrate these sensors through a robust information architecture that allows highly trained multi- and all-source analysts to rapidly access and analyze all

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pertinent data and deliver it quickly to the Warfighter and decision makers. DoD ISR Processing, Exploitation, and Dissemination (PED) capability has evolved considerably over the last decade. To continue the maturation, there is the need to break the linear relationship between collection and analysis, where every increment of additional collection capacity requires a proportionate increase in analytical manpower. Tied to ISR and PED systems, the fastest-growing military capabilities are in cyberspace. Activities in this human-created domain are familiar to all, but lesser known is the fact that they evolved from ISR activities dating to the 1980s. By 2023, ISR and cyber forces will be an integral partner to the joint team that operates in cyberspace to meet joint force commander and national needs. The highly complex strategic environment of 2023 will require robust multi- and all-source analysis. It will demand focus on all phases of the intelligence cycle and capability to perform in all phases of conflict.

Additionally, information-age technology is advancing at a stunning pace, yielding increasingly common information architectures, data accessibility, and knowledge management—all of which have created the conditions for a leap in intelligence processes. Whether it is labeled as “big data,” data mining, Activity-Based Intelligence (ABI), or Object-Based Production (OBP), the vast amount of information that DoD collects demands a transformation in the way DoD processes, organizes, and presents data. To optimize limited manpower and resources, DoD will develop a new ISR force presentation model to ensure a standard, repeatable process that results in effective and efficient delivery of focused, actionable, and timely analysis from our federated fusion, Signal Intelligence (SIGINT), Geospatial Intelligence (GEOINT), and Human Intelligence (HUMINT) enterprise; provide the opportunity to reset and reconstitute forces; and finally, DoD will develop and deploy analysis architecture and tools to better automate, visualize, collaborate, and integrate analysis and exploitation. The most important and challenging part of this analysis and exploitation revolution is the need to shift to a new model of intelligence analysis and production. The growing complexity of the data DoD collects along with the sheer quantity of data has obviated the traditional linear model of production. The new model treats all intelligence collection as sources of meta-tagged data accessible across multiple domains, organizational, and security divides from which analysts—trained in all-source techniques and methods—can discover, assess, and create relevant knowledge for commanders and decision makers at all levels.

Islamic State of Iraq and the Levant (ISIL), Al Qaeda Network (AQN), other Violent Extremist Organization (VEO), and near-peer, strategic operations are utilizing rapidly changing communications equipment and protocols (coupled with tactics, techniques, and procedures) that have decreased the DoD’s ability to find, fix, track, target, execute, and assess. This comprises a general operational deficiency area called Modern Signals Collection and Direction Finding (MSCDF). To counter these adversary capabilities, rapid reprogrammable payloads and quick reaction integration and test is a requirement for newly developed and delivered ISR systems. SoC and applicable embedded system development will ensure collection flexibility, interoperability, and rapid integration on both manned and unmanned platforms given achieved lower size, weight, and power. This will enable rapid integration of capabilities in theater, enabling the potential to reposition platforms and modify mission sets (to counter adversary evolution) across different Areas of Responsibility. SoC will further improve the security posture of these ISR systems through enabling single chip encryption while ensuring no cross contamination of data between sensitive processes.

### **C.4 OBJECTIVE**

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The objective of this TO is to provide the DoD with operational support, based on integration of developed capabilities, and research in the areas of remote sensing, communications, and cyber operations and security. The TO shall focus on the integration and coordination of systems and subsystems for remote sensing, ISR data collection, analysis, and dissemination, as well as for continuous ISR during execution and after-action assessment. This TO shall provide cost-effective integration and operations of emerging technologies, and leverage expertise in research, engineering, science, technology, rapid prototyping, technical development, advisory support, integration, and operational support for a mix of manned and remotely piloted platforms. Specifically, this TO will integrate and test and evaluate SoC for demonstration and operational support for applicable and approved ISR systems, and associated cyber security, communications, and information assurance.

### **C.5 TASKS**

#### **C.5.1 TASK 1 – PROVIDE PROJECT MANAGEMENT**

The contractor shall provide project management support under this TO. This includes the management and oversight of all activities performed by contractor personnel, including subcontractors, to satisfy the requirements identified in this Performance Work Statement (PWS). The contractor shall identify a Project Manager (PM) by name who shall provide management, direction, administration, quality assurance, and leadership of the execution of this TO.

##### **C.5.1.1 SUBTASK 1.1 – ACCOUNTING FOR CONTRACTOR MANPOWER REPORTING**

The contractor shall report ALL contractor labor hours (including subcontractor labor hours) required for performance of services provided under this contract for the DoD via a secure data collection site. The contractor shall completely fill in all required data fields using the following web address: <http://www.ecmra.mil/>.

Reporting inputs will be for the labor executed during the period of performance during each Government Fiscal Year (FY), which runs October 1 through September 30. While inputs may be reported any time during the FY, all data shall be reported no later than October 31 of each calendar year. Contractors may direct questions to the support desk at: <http://www.ecmra.mil/>.

Contractors may use Extensible Markup Language (XML) data transfer to the database server or fill in the fields on the website. The XML direct transfer is a format for transferring files from a contractor's systems to the secure web site without the need for separate data entries for each required data element at the website. The specific formats for the XML direct transfer may be downloaded from the web.

##### **C.5.1.2 SUBTASK 1.2 – COORDINATE A PROJECT KICK-OFF MEETING**

The contractor shall schedule, coordinate, and host a Project Kick-Off Meeting at the location approved by the Government (Section F, Deliverable 02). The meeting will provide an introduction between the contractor personnel and Government personnel who will be involved with the TO. The meeting will provide the opportunity to discuss technical, management, and security issues, and travel authorization and reporting procedures. At a minimum, the attendees

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shall include Key contractor Personnel, representatives from the directorates, other relevant Government personnel, and the FEDSIM COR.

At least three days prior to the Kick-Off Meeting, the contractor shall provide a Kick-Off Meeting Agenda (Section F, Deliverable 01) for review and approval by the FEDSIM COR and the Technical Point of Contact (TPOC) prior to finalizing. The agenda shall include, at a minimum, the following topics/deliverables:

- a. Points of Contact (POCs) for all parties
- b. Draft Project Management Plan (PMP) (Section F, Deliverable 07) and discussion including schedule, tasks, etc.
- c. Personnel discussion (i.e., roles and responsibilities and lines of communication between contractor and Government)
- d. Staffing Plan and status
- e. Transition-In Plan (Section F, Deliverable 11) and discussion
- f. Security discussion and requirements (i.e., building access, badges, Common Access Cards (CACs))
- g. Invoicing requirements
- h. Transition discussion

The Government will provide the contractor with the number of Government participants for the Kick-Off Meeting and the contractor shall provide sufficient copies of the presentation for all present.

The contractor shall draft and provide a Kick-Off Meeting Minutes Report (Section F, Deliverable 03) documenting the Kick-Off Meeting discussion and capturing any action items.

### **C.5.1.3 SUBTASK 1.3 – PREPARE A MONTHLY STATUS REPORT (MSR)**

The contractor shall develop and provide an MSR (Section J, Attachment F) (Section F, Deliverable 04). The MSR shall include the following:

- a. Activities during reporting period, by task (include on-going activities, new activities, and activities completed, and progress to date on all above mentioned activities). Each section shall start with a brief description of the task.
- b. Problems and corrective actions taken. Also include issues or concerns and proposed resolutions to address them.
- c. Personnel gains, losses, and status (security clearance, etc.).
- d. Government actions required.
- e. Schedule (show major tasks, milestones, and deliverables; planned and actual start and completion dates for each).
- f. Summary of trips taken, conferences attended, etc. (attach Trip Reports to the MSR for reporting period).
- g. Accumulated invoiced cost for each CLIN up to the previous month.
- h. Projected cost of each CLIN for the current month.

### **C.5.1.4 SUBTASK 1.4 – CONVENE TECHNICAL STATUS MEETINGS**

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The contractor PM shall convene a monthly Technical Status Meeting with the TPOC, FEDSIM COR, and other Government stakeholders (Section F, Deliverable 05). The purpose of this meeting is to ensure all stakeholders are informed of the monthly activities and MSR, provide opportunities to identify other activities and establish priorities, and coordinate resolution of identified problems or opportunities. The contractor PM shall provide minutes of these meetings, including attendance, issues discussed, decisions made, and action items assigned, to the FEDSIM COR within five workdays following the meeting (Section F, Deliverable 06).

### **C.5.1.5 SUBTASK 1.5 – PREPARE A PROJECT MANAGEMENT PLAN (PMP)**

The contractor shall document all support requirements in a PMP. The contractor shall provide the Government with a draft PMP (Section F, Deliverable 07) on which the Government will make comments. The final PMP (Section F, Deliverable 08) shall incorporate the Government's comments.

The PMP shall:

- a. Describe the proposed management approach.
- b. Contain detailed Standard Operating Procedures (SOPs) for all tasks.
- c. Include milestones, tasks, and subtasks required in this TO.
- d. Provide for an overall Work Breakdown Structure (WBS) with a minimum of three levels and associated responsibilities and partnerships between Government organizations.
- e. Describe in detail the contractor's approach to risk management under this TO.
- f. Describe in detail the contractor's approach to communications, including processes, procedures, communication approach, and other rules of engagement between the contractor and the Government.
- g. Contain a Quality Control Plan (QCP)

### **C.5.1.6 SUBTASK 1.6 – UPDATE THE PROJECT MANAGEMENT PLAN (PMP)**

The PMP is an evolutionary document that shall be updated annually at a minimum (Section F, Deliverable 09). The contractor shall work from the latest Government-approved version of the PMP.

### **C.5.1.7 SUBTASK 1.7 – LESSONS LEARNED REPORTS**

The contractor shall submit lessons learned reports (Section F, Deliverable 10), as requested by the TPOC and COR via email, to document any lessons learned during TO execution. The lessons learned reports shall:

- a. Identify the activity or experience.
- b. Identify the problem or success.
- c. Describe the impact of the problem or success.
- d. Provide a recommendation to the problem or success.

Lessons learned reports shall be submitted to the Joint Staff lessons learned database in the correct format. Service components will submit lessons learned to the service lesson learned database using the format outlined by the database.

### **C.5.1.8 SUBTASK 1.8 – PREPARE TRIP REPORTS**

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The Government will identify the need for a Trip Report when the request for travel is submitted (Section F, Deliverable 11). The contractor shall keep a summary of all long-distance travel including, but not limited to, the name of the employee, location of travel, duration of trip, and Point of Contact (POC) at travel location. Trip reports shall also contain Government approval authority, total cost of the trip, a detailed description of the purpose of the trip, and any knowledge gained. At a minimum, trip reports shall be prepared with the information provided in Section J, Attachment G.

### **C.5.2 TASK 2 – TRANSITION-IN**

The contractor shall provide a Transition-In Plan as required in Section F (Section F, Deliverable 12). The contractor shall ensure that there will be minimum service disruption to vital Government business and no service degradation during and after transition. The contractor shall implement its Transition-In Plan No Later Than (NLT) five Government workdays after award, and all transition activities shall be completed 15 Government workdays after approval of Transition-In Plan (Section F, Deliverable 12)

### **C.5.3 TASK 3 – TRANSITION-OUT**

The contractor shall provide Transition-Out support when required by the Government. The Transition-Out Plan shall facilitate the accomplishment of a seamless transition from the incumbent to an incoming contractor/Government personnel at the expiration of the TO. The contractor shall provide a draft Transition-Out Plan within six months of Project Start (PS) (Section F, Deliverable 13). The Government will work with the contractor to finalize the Transition-Out Plan (Section F, Deliverable 13) in accordance with Section E. At a minimum, this Transition-Out Plan shall be reviewed and updated quarterly (Section F, Deliverable 13).

In the Transition-Out Plan, the contractor shall identify how it will coordinate with the incoming contractor and/or Government personnel to transfer knowledge regarding the following:

- a. Project management processes
- b. Points of contact
- c. Location of technical and project management documentation
- d. Status of ongoing technical initiatives
- e. Appropriate contractor to contractor coordination to ensure a seamless transition
- f. Transition of Key Personnel
- g. Schedules and milestones
- h. Actions required of the Government

The contractor shall also establish and maintain effective communication with the incoming contractor/Government personnel for the period of the transition via weekly status meetings or as often as necessary to ensure a seamless Transition-Out.

The contractor shall implement its Transition-Out Plan NLT six months prior to expiration of the TO.

### **C.5.4 TASK 4 – PROVIDE ENGINEERING SERVICES**



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The contractor shall provide engineering support to advance the objectives using sound engineering processes. This includes assessing the applicability and suitability of System on a Chip (SoC) integration in support of applicable ISR mission sets.

An integral part of developing technologies is the process of discovering the technological principles of a device, object, or system through analysis of its structure, function, and operation. Systems engineering and analysis shall include the analysis of technologies and capabilities to identify alternatives to improving systems engineering discipline in the design, development and deployment ISR and cyber systems. These analyses shall focus on creating a complete illustration of a system's current state, including operations, and performance. (Section F, Deliverable 16 and 17)

- a. Analyze mission needs statements, requirements concepts, integration and interoperability of selected technologies, systems, services, standards, and combinations thereof in order to identify potential design changes legacy and emerging systems that may provide operational effectiveness and efficiency benefits.
- b. Conduct Analysis of Alternatives (AoA) and evaluate the effectiveness, efficiency, and applicability of technologies and approaches in operational applications and assess standards, procedures, and practices for developing, fielding, and supporting operational use by Warfighters. This includes assessing the applicability and suitability of System on a Chip (SoC) integration in support of applicable ISR mission sets.
- c. Facilitate cooperation between key government stakeholders, decision-makers and emerging technologies developmental planning teams to define technology applications, transition opportunities, and common strategic goals and objectives for new or improved communication technologies to meet ISR requirements and milestones. Report on these synergies between stakeholders and provide project plan options for government review and approval.
- d. Identify emerging trends, "state of the art" technologies, markets, practices, services, systems and standards that improve persistent communication capabilities and operational effectiveness while achieving fiscal and technological cost reductions.
- e. Develop recommendations, Concepts of Operations (CONOPS) and/or Tactics, Techniques and Procedures (TTPs) for the transition, operational integration and sustainment available communication technology prototypes concepts, applications, and services.
- f. Ensure engineering supports the Intelligence Community (IC) TTPs in support of intelligence collection, exploitation, analysis and dissemination. Develop unique collection, exploitation, analysis and reporting of Publicly Available Information (PAI) systems to support the IC.
- g. Develop innovative systems for intelligence collection, analysis, production and dissemination of heretofore unmonitored/unexploited client directed communications.
- h. All engineering shall be compliant with Capability Maturity Model Integration (CMMI) Level III.

### **C.5.4.1 SUBTASK 4.1 – PROVIDE ENGINEERING PROTOTYPE CAPABILITY**

The contractor shall implement and test custom capabilities as defined in this contract to meet mission driven requirements. The scope of these prospective tasks may include, but are not limited to:

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- a. Prototyping of SoC into applicable ISR sensors and onboard front end processing systems.
- b. Integration of Commercial Off-The-Shelf (COTS) and Government provided equipment for compatibility with the host platform and secured availability requirements.
- c. Repackaging equipment to meet platform physical constraints.
- d. Environmental hardening of COTS and Government equipment for the deployment environment.
- e. Integrating diverse Government sensors and collection equipment to perform a new mission.
- f. Auxiliary equipment to adapt to host platform interfaces for power, communications and sensor inputs/outputs.
- g. Creating interface devices to enable communication between systems with disparate or proprietary interfaces.
- h. Adapting systems to function via remote control over a data link.

### **C.5.4.2 SUBTASK 4.2 – PROVIDE INTEGRATION SUPPORT**

System integration support encompasses all the engineering activities necessary to integrate onto an operational platform and transition it to a mission-ready operational state and/or readiness for test and evaluation. It also includes integration of system support equipment into the Government's infrastructure and verifying the end-to-end capability.

The contractor shall provide integration support for SoC such that engineered technologies are usable within the appropriate platform and/or state. Specific system integration support tasks may include, but are not limited to:

- a. Site surveys, engineering planning and design support for new installations.
- b. Installation and integration of payloads on manned and unmanned aerial vehicle UAVs.
- c. Installation and testing of data links and communications networks to provide connectivity between payloads, operators and end users.
- d. Integration testing to ensure compatibility with the host platform and to satisfy safety certification requirements of the platform operator.
- e. End-to-end testing and evaluation of payloads and systems in accordance with approved test plans and procedures.
- f. Assisting the Government with the planning and conduct of Operational Readiness Exercises.
- g. Conducting readiness and acceptance reviews as proposed and agreed upon at the kick-off meeting.
- h. Maintenance and repair of equipment and systems during field integration and testing activities.
- i. The contractor shall prepare and deliver integration documentation in accordance with their best practices. The contractor shall use a configuration management process to track changes in the supporting documentation and equipment configuration.

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- j. The contractor shall provide qualified engineers and technicians that meet the security requirements applicable to the Temporary Duty (TDY) location, including hazardous duty locations.

### **C.5.4.3 SUBTASK 4.3 – PROVIDE MODELING AND SIMULATION FOR ASSESSMENT**

The contractor shall provide modeling and simulation expertise for the purpose of identifying new engineering tools and environments technology, techniques, methodology, software and environments and will ultimately enhance systems supporting ISR and cyber. The contractor shall conduct research and analysis to develop modeling and simulation and analytical reports to enhance tactical and strategic survivability and lethality decisions via quantitative and qualitative techniques. Utilize operations research methodologies, statistical analysis and simulation tools to analyze system alternatives, and develop recommendations in terms of mission effectiveness, vulnerability, and cost.

The contractor shall use the developed mod/sim to perform preliminary evaluations of engineered solutions to validate objectives are being met. Examples of mod/sim activities:

- a. Prediction and analysis of prototype system performance, both without and with SoC integrated
- b. Determination of capabilities and limitation of existing systems
- c. Determination of systems and geolocation accuracy
- d. Modeling and simulation of antennas
- e. Predication of communication coverage
- f. Analysis of circuit and system performance

### **C.5.4.4 SUBTASK 4.4 - PROVIDE FIELD TESTING SUPPORT**

The contractor shall procure hardware, software and accessories necessary to implement the agreed upon system design. This implemented design will include SoC, as applicable and agreed to by the Government. Procurements shall be non-attributable to the Customer. End item deliverables shall not contain markings identifying the contractor or association with the Government.

Since prospective tasks will require the use of existing Government developed and procured systems, the contractor is expected to collaborate with Original Equipment Manufacturers (OEM) for engineering support or implementation of the required system modifications. The contractor shall identify the level of OEM support required in their implementation plan. The contractor shall be prepared to subcontract engineering support and design services to OEM's.

The contractor shall execute processes and activities to obtain airworthiness approval from the customer. The contractor shall document airworthiness activities in a Modification Airworthiness Certification Criteria (MACC) Document. The contractor shall show compliance to the airworthiness criteria by performing a combination of inspections, demonstrations, analyses and tests. The contractor shall report the status of airworthiness documentation. If the contractor cannot show literal compliance, but design and operations provide a level of safety acceptable to the government, the contractor shall conduct a formal risk assessment and request that the United

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States Air Force (USAF) exempt (permanent) or waive (temporary) the airworthiness criteria. The contractor shall provide access to the design package so that the USAF may find conformity of the store and/or airborne equipment. The contractor shall assess the airworthiness of the store/airborne equipment and provide recommendations that the store/airborne equipment are safe for flight. The contractor shall provide all supporting airworthiness documentation to the USAF. The contractor may consult AFI 62-601, USAF Airworthiness and 645 AESG OI 62-601, Big Safari Airworthiness Process to understand the airworthiness process.

### **C.5.4.5 SUBTASK 4.5 - PROVIDE TEST AND VALIDATION**

Perform SoC developmental testing on selected military systems, subsystems, platforms and sensing systems related to ISR and cyber. The testing performed shall take place in realistic operational scenarios and will meet all testing requirements, such as percent coverage, specified by the Government. The contractor shall use the Requirements Traceability Verification Matrix (RTVM) together with other documentation to describe how the ISR system(s) will be tested to demonstrate the desired functionality.

- a. The contractor shall generate a sample test report in which the testing results can be documented and provides traceability to the Test Plan (Section F, Deliverable 14)
- b. The contractor shall prepare a system-level operational test plan and procedure that demonstrates that all hardware and software developed as the desired system-level functionality. (Section F, Deliverable 14)

The contractor shall plan and conduct a test and verification process for ISR and cyber capabilities to show that the deliverables are fully compliant with the requirements. The test and verification process shall include software, hardware, SoC, interfaces, EMI/EMC, structural coupon testing of composite material structural testing of the assembly, and environmental testing such as thermal shock, humidity, temperature, and vibration in accordance with standards as dictated by the platform operator. The Government will provide an aircraft for the test and verification process.

The contractor shall research and develop an optimal process for Test and Evaluation (T&E) of each system, subsystem, platform or sensing system to be prototyped. This shall require evaluating the testing needs of prototypes and developing appropriate test plans, including plans for field demonstrations and for participating in field exercises. The testing process specified in the plans shall employ realistic operational scenarios and will meet all testing requirements specified by the Government. The test planning process shall also include designing and developing automated test systems such as hardware in the loop and developing test data collection and evaluation methods, such as quantitative and qualitative methods. (Section F, Deliverable 14).

The contractor shall compile and evaluate the electronic test data produced by the above developmental testing of system, subsystem and platform prototypes. To facilitate evaluation of the test data, design and develop models of the operation, such as information flow, of the collection systems and subsystems, and sensing systems tested.

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### **C.5.5 TASK 5 – PROVIDE EDUCATION, TRAINING, AND TACTICS, TECHNIQUES, AND PROCEDURES (TTP) DEVELOPMENT SERVICES**

#### **C.5.5.1 SUBTASK 5.1 - PROVIDE TRAINING PLATFORMS**

The contractor shall provide appropriate training platforms to support the training and mission objectives. These training platforms shall be configurable with sufficient infrastructure to support Advanced Technical Operations Courses.

Training platforms may include but are not limited to airframes such as: Beechcraft 350 and Cessna 208B. These platforms will be either provided by the Government or contractor provided, in terms of a lease (versus procurement), as determined by the applicable test plan. Training platforms must include the ability to modify antennas for mission training.. Flight time shall be billed under ODC (CLIN X004).

Training platforms shall allow for SOF specific load-out and an RF transparent POD, and authorization to mount these types of devices.

Configuration of the training platforms shall be documented in a Configuration Plan.

#### **C.5.5.2 SUBTASK 5.2 - PROVIDE TRAINING AND CERTIFICATION CAPABILITIES**

The contractor shall train, certify or recertify operators on advanced technical operations. This training shall include classroom and airborne coursework. The Advanced Tactical Operations Course (ATOC) training shall include the following:

- a. Provide an overall training plan outlining the ATOC training, including training for ISR systems and technology support with and without SoC.
- b. Provide persistent communication technology training at both basic and advanced levels and cover, at a minimum, PTT, Mode 1/2/3/4, Wireless/Class 3.
- c. Provide scenario based training to include role players and full mission profile activities. Scenarios may include using role players and other personnel to better simulate full mission profile activities.
- d. Develop, maintain, and support Training Materials (Section F, Deliverable 18)